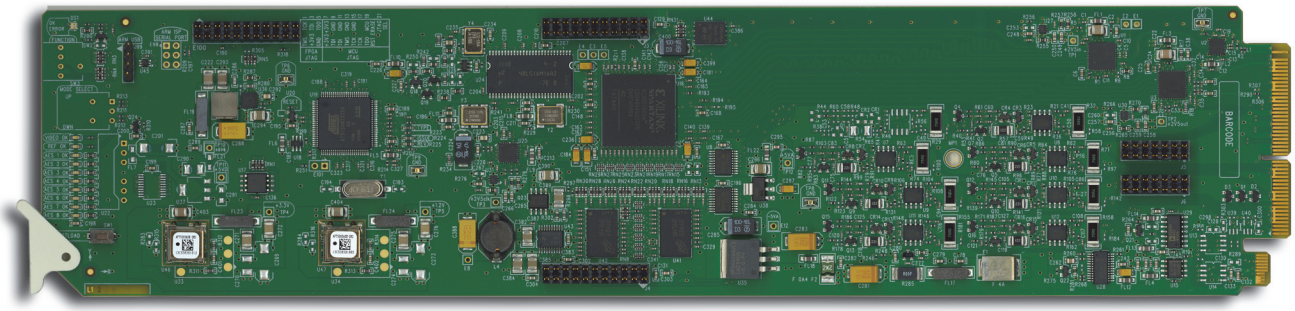
openGear

SFS-8622-A

Single Channel Frame Synchronizer with Audio Processing User Manual



ROSS

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Our mission is to:

1. Provide a Superior Customer Experience
    - offer the best product quality and support
2. Make Cool Practical Technology
    - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

David Ross
CEO, Ross Video
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Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

SFS-8622-A User Manual

- Ross Part Number: 8622DR-004-01
- Release Date: July 9, 2014.

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Patents

Patent numbers 4,205,346; 5,115,314; 5,280,346; 5,561,404; 7,034,886; 7,508,455; 7,602,446; 7,834,886; 7,914,332; 8,499,019 B2; 2039277; 1237518; 1127289 and other patents pending.

Important Regulatory and Safety Notices to Service Personnel

Before using this product and nay associated equipment, refer to the "**Important Safety Instructions**" listed below to avoid personnel injury and to prevent product damage.

Product may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings

This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage to persons or equipment.

Warning — *The symbol with the word "**Warning**" within the equipment manual indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.*

Caution — *The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.*

Notice — *The symbol with the word "**Notice**" within the equipment manual indicates a potentially hazardous situation, which, if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.*

ESD Susceptibility — *This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.*

Important Safety Instructions

Caution — *This product is intended to be a component product of the DFR-8321 and OG3-FR series frame. Refer to the DFR-8300 and OG3-FR Series Frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as its component products.*

Warning — *Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing this area.*

Warning — *Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.*
This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained with the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair. To reduce the risk of fire, replacement fuses must be the same time and rating. Only use attachments/accessories specified by the manufacturer.

EMC Notices

United States of America
FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Notice — *Changes or modifications to this equipment not expressly approved by Ross Video Limited could void the user's authority to operate this equipment.*

CANADA

This Class "A" digital apparatus complies with Canadian ICES-003.

Cet appariel numerique de la classe "A" est conforme a la norme NMB-003 du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of CE Directive 93/68/EEC.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, and found to comply with the limits for a Class A Digital device.

Notice — *This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.*

Maintenance/User Serviceable Parts

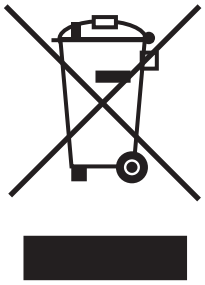
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products are covered by a generous 5-year warranty and will be repaired without charge for materials or labor within this period. See the "Warranty and Repair Policy" section in this manual for details.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed out wheelie bin symbol invites you to use these systems.



If you need more information on the collection, re-use, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performance of our products.

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Introduction

In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagrams
- Frame Synchronizer Overview
- User Interfaces
- Documentation Terms and Conventions

A Word of Thanks

Congratulations on choosing an openGear SFS-8622-A Single Channel Frame Synchronizer with Audio Processing. Your card is part of a full line of products within the openGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new card fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your card, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

Overview

Each card is a single channel SD/HD/3G SDI frame synchronizer that automatically detects the incoming video format. Each card accepts an SDI signal of either 270Mbps, 1.485Gbps, or 2.987Gbps, automatically equalizing for cable loss and providing two processed SDI outputs. The video is synchronized to either a frame-wide reference or a local reference. You can also resolve system timing problems as an additional fixed delay can be added to the video and/or audio.

Each card is also a high quality program AES multiplexer/de-multiplexer capable of embedding/de-embedding up to six AES/EBU pairs (twelve audio channels) into an SDI signal. Audio proc control on each output allows for audio processing with independent channel Sample Rate Conversion (SRC) on each AES input, gain of +/-20dB, audio delay up to 1 second and channel phase invert and summing capability. If the input is a synchronous 48kHz signal, the audio can be embedded into the SDI signal unaltered. If the input is not a synchronous 48kHz signal, it may be converted using SRC before it is embedded on the SDI output.

Table 1.1 summarizes how each card model can be configured in DashBoard.

Table 1.1 Configuration Options

Card Model	Mode 1	Mode 2	Mode 3
SFS-8622-A	6 x AES-3id 75ohm unbalanced inputs	6 x AES-3id 75ohm unbalanced outputs	3 x AES-3id 75ohm unbalanced inputs, 3 x AES-3id 75ohm unbalanced outputs

Features

The following features are available:

- Supports SMPTE 259M (270Mbps), SMPTE 292M (1.485Gbps), and SMPTE 424M (2.987Gbps)
- Supports embedding of non-PCM data such as Dolby® Digital and Dolby® E
- Two SDI processed outputs[1]
- Video proc amp on output video
- Six configurable AES connections (can be configured as inputs or outputs)
- Support for up to 28 frames of video delay
- Support for different reference format locking (frame rates must match)
- Programmable video output on SDI input loss
- Automatic input video format detection
- Ability to strip VANC data from specific or all lines of a video output
- No HANC or VANC processing (pass through the Frame Sync)
- Audio embedding for all popular formats: 480i, 576i, 720p, 1080i, and 1080p (Level A)
- Full control over channel assignments
- Audio proc controls such as gain, invert, delay and sum on embedded outputs and AES outputs
- Internally generated test patterns and test tones
- Programmable silence detection and timeout thresholds

1. When the card is passing live video, embedded audio and other ancillary data are passed through.

- Automatic audio delay to match video delay in addition to up to 1 second of user adjusted audio delay
- Reports status and configuration remotely via the DashBoard Control System
- SNMP support available
- Fits openGear frames
- 5-year transferable warranty

Functional Block Diagrams

This section provides functional block diagrams that outline the work flow of the SFS-8622-A.

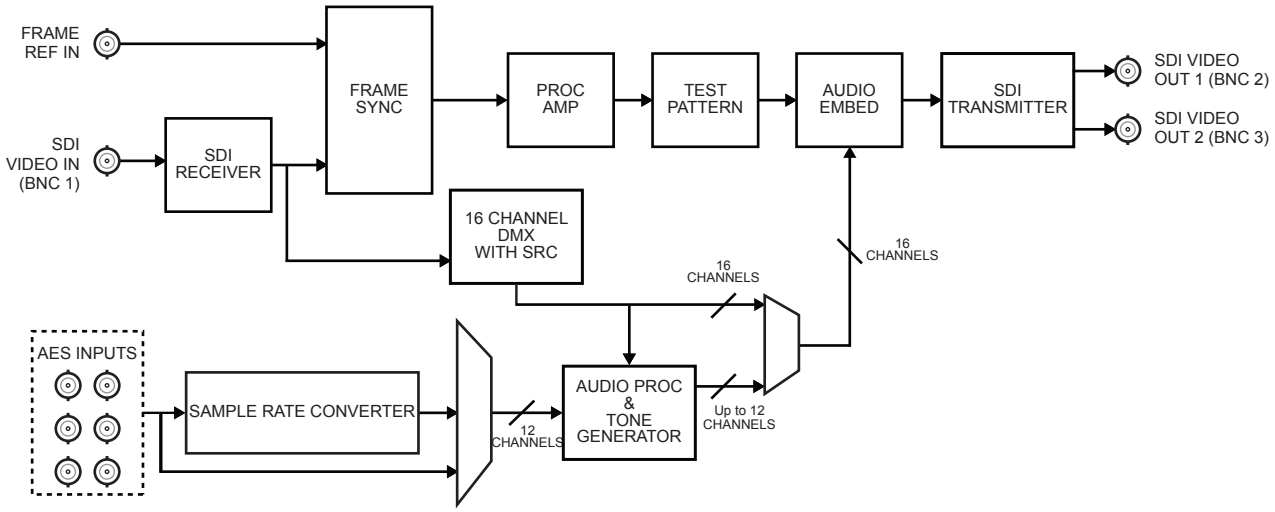


Figure 1.1 *SFS-8622-A — Six Unbalanced AES Inputs*

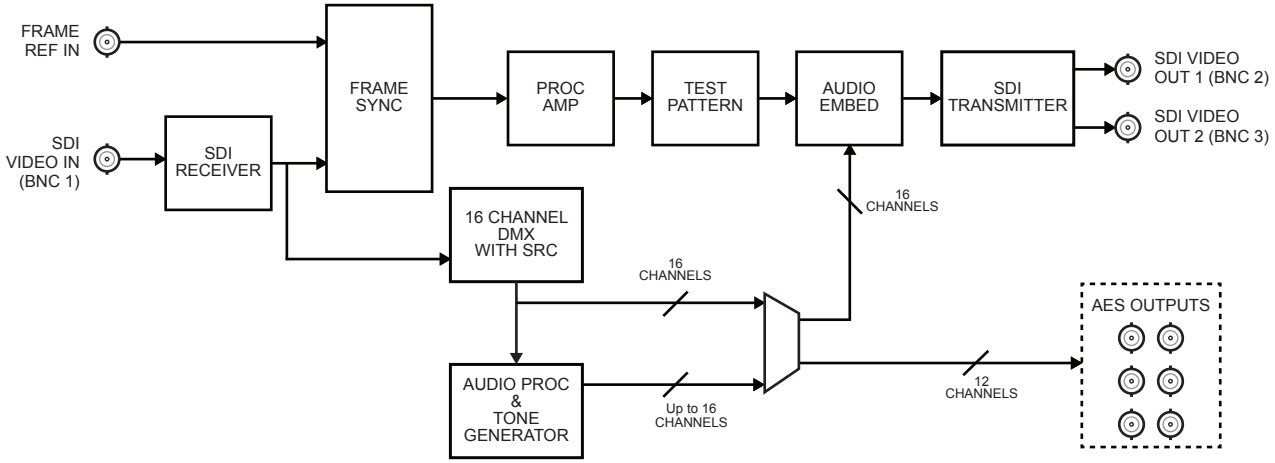


Figure 1.2 *SFS-8622-A — Six Unbalanced AES Outputs*

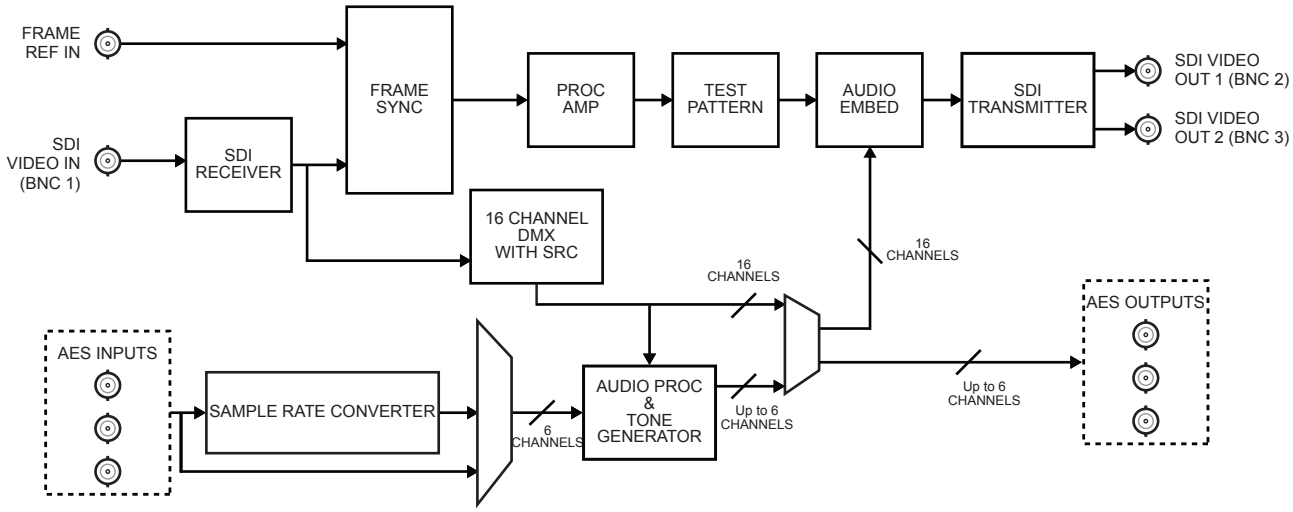


Figure 1.3 *SFS-8622-A — Three Unbalanced AES Inputs, Three Unbalanced AES Outputs*

Frame Synchronizer Overview

Each card will typically be used in a broadcast studio for one or both of the following functions:

- Frame delay for timing alignment
- Frame synchronizer for frame rate conversion

Figure 1.4 illustrates the operation of your card

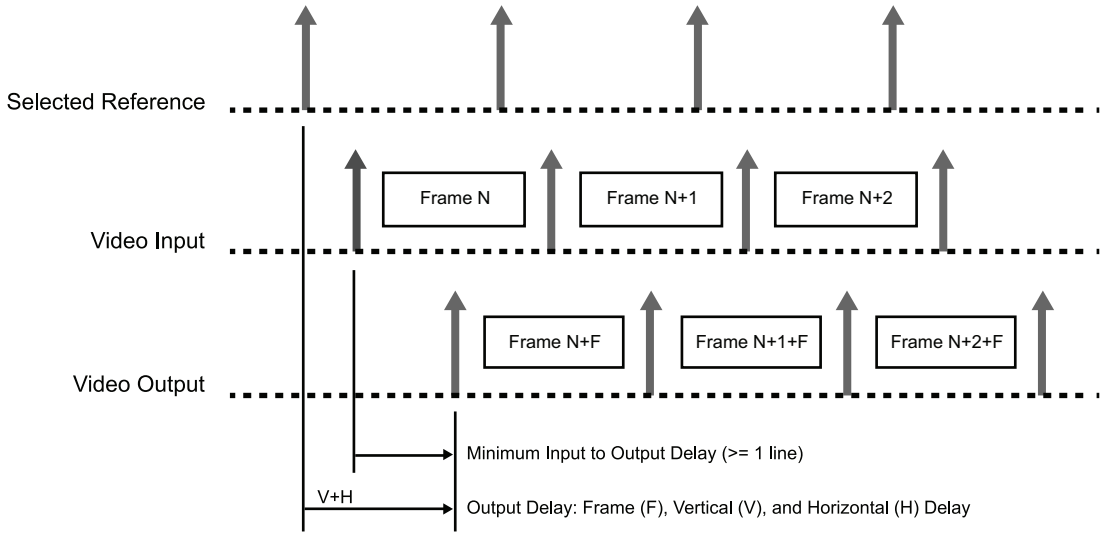


***Figure 1.4** Functional Overview*

The following elements are presented in **Figure 1.4**:

1. Up Arrow

Represents the start of a video frame.

2. Selected Reference

The selected reference can be on of the following: either analog reference from the openGear frame, or the digital reference extracted from the SDI video input. Note that when selecting the digital reference from the SDI input, **Figure 1.4** should be re-drawn with the Up Arrows of the Selected Reference and Video Input aligned vertically.

3. Video Input

The SDI video input is derived from the rear module. When the video input is not locked to the selected reference, the video input start of frame will drift compared to the reference. This can be visualized by sliding the Up Arrows of **Figure 1.4** to the left if the video input frame rate is slower than the reference, or to the right if it is higher.

4. Video Output

The processed SDI video outputs are available on the rear module.The video output timing is always locked to the selected reference. The card allows the user to set the relative position of the video output start of frame as an offset to the reference. With the adjustable Vertical and Horizontal Delay settings, you can set the relative offset anywhere in the reference frame timing, in increments of 1 line for vertical timing and 1 pixel for horizontal timing.

5. Delay (F, V, H)

The value F represents the number of frame of delay that can be adjusted, the value V the number of lines, and the value H the number of pixels of delay. The delay values can be adjust from 1 (default) to a maximum limit of 28.

User Interfaces

Your card includes three control and monitoring interfaces.

DashBoard Control System

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the frame through the Network Controller Card. The DashBoard Control System software and manual are available for download from our website.

For More Information on...

- the menus in DashBoard, refer to the chapter "**DashBoard Menus**" on page 6-1.
- using DashBoard, refer to the ***DashBoard User Manual***.

Card-edge Monitoring

The front-edge of each card features LED indicators for the power, and video reference input status.

For More Information on...

- the card-edge monitoring features, refer to the section "**Control and Monitoring Features**" on page 5-3.

SNMP Monitoring and Control

The Network Controller Card in the openGear frame can provide optional support for remote monitoring of your frame and using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

For More Information on...

- enabling SNMP Monitoring and Control for your frame, refer to the ***MFC-8300 Series User Manual***.
- SNMP controls for the SFS-8622-A, refer to the Management Information Base (MIB) for your card model.

Documentation Terms and Conventions

The following terms and conventions are used throughout this manual.

Terms

The following terms are used:

- "**Board**", and "**Card**" refer to the SFS-8622-A unless otherwise noted.
- "**DFR-8321 series**" refers to DFR-8321 series frames and any available options.
- "**Frame**" refers to the openGear frame that houses the card.
- "**OG3-FR series**" refers to all versions of the OG3-FR series frames and any available options.
- "**openGear frame"** also includes all version of the DFR-8321 series and OG3-FR series frames and any available options unless otherwise noted.
- "**Operator**" and "**User**" refer to the person who uses the card.
- "**PAL**" refers to PAL-B, and PAL-G unless otherwise noted.
- "**PCM**" refers to Pulse Code Modulation.
- "**SRC**" refers to Sample Rate Conversion.
- "**System**" and "**Video system**" refer to the mix of interconnected production and terminal equipment in your environment.

Conventions

The following conventions are used:

- "**Operating Tips**" and "**Note**" boxes are used to provide additional user information.

Installation

In This Chapter

This chapter provides instructions for installing a rear module, installing a card into an openGear frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Installing a Card
- SFS-8622-A Cabling Overview
- Using DashBoard
- Software Upgrades

Before You Begin

Before proceeding with the instructions in this chapter, ensure that your openGear frame is properly installed according to the instructions in its manual.

Static Discharge

Throughout this chapter, please heed the following cautionary note:

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

Unpacking

Unpack each SFS-8622-A you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Installing a Card

This section outlines how to install a rear module and card in an openGear frame.

Note — *The SFS-8622-A cards are not supported in the DFR-8310 series frames.*

Supported Rear Modules

The **8320AR-041** Full Rear Module is required when installing the SFS-8622-A.

Installing a Rear Module

If the Rear Module is already installed, proceed to the section "**Installing the Card**" on page 2-4.

To install a rear module in your openGear frame

1. Locate the card frame slots on the rear of the frame.
2. Remove the Blank Plate from the slot you have chosen for the card installation.
3. Install the bottom of the Rear Module in the **Module Seating Slot** at the base of the frame's back plane. **Figure 2.1**

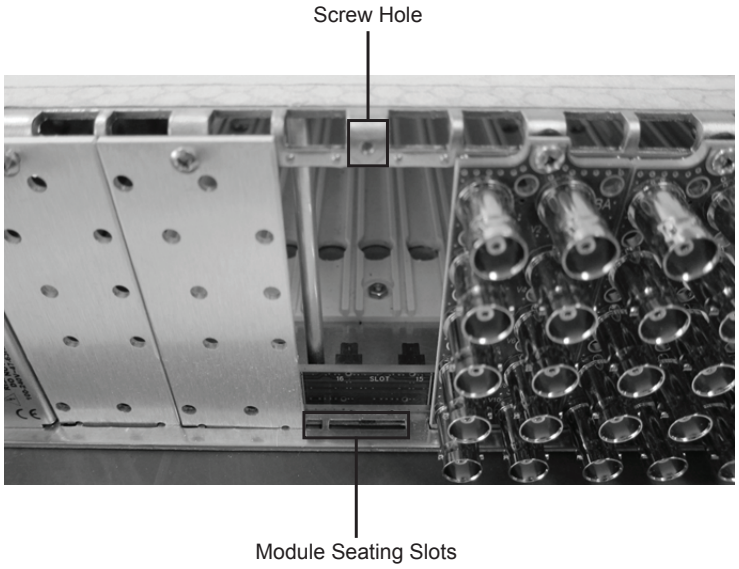


Figure 2.1 *Rear Module Installation in an openGear Frame (Card not shown)*

4. Align the top hole of the Rear Module with the screw on the top-edge of the frame back plane.
5. Using a Phillips screwdriver and the supplied screw, fasten the Rear Module to the back plane of the frame. Do not over tighten.
6. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or Blank Plates.

Installing the Card

This section outlines how to install a card in an openGear frame. If the card is to be installed in any compatible frame other than a Ross Video product, refer to the frame manufacturer's manual for specific instructions.

To install the card in an openGear frame

1. Locate the Rear Module you installed in the procedure "**Installing a Rear Module**" on page 2-3.
2. Hold the card by the edges and carefully align the card-edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection plus is properly seated in the Rear Module.
4. Verify whether your Rear Module Label is self-adhesive by checking the back of the label for a thin wax sheet. You must remove the wax sheet before affixing the label.
5. Affix the supplied Rear Module Label to the BNC area of the Rear Module.

SFS-8622-A Cabling Overview

The synchronous AES audio input streams at 48kHz or any asynchronous AES streams from 32kHz to 96kHz with SRC enabled. Note that SRC should only be used with Pulse Code Modulation (PCM) digital audio and not any form of compressed signal, such as Dolby®.

Note — *AES inputs and outputs are configured in groups of three.*

Figure 2.2 illustrates the cabling designations for one SDI input, two SDI outputs, and six unbalanced AES inputs.

Figure 2.3 illustrates the cabling designations for one SDI input, two SDI outputs, and six AES-3id 75ohm unbalanced outputs.

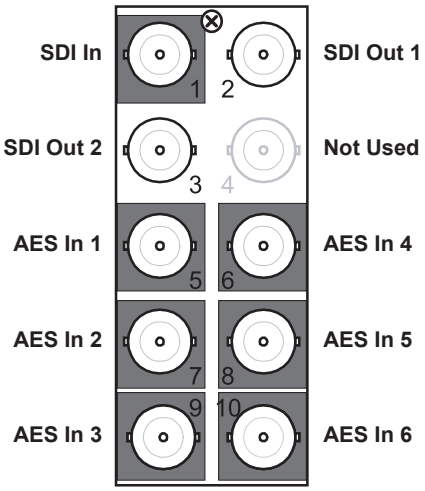


Figure 2.2 *Cable Connections for the SFS-8622-A*

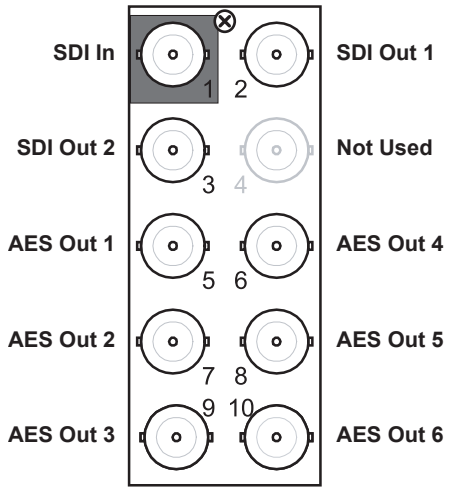


Figure 2.3 *Cable Connections for the SFS-8622-A*

Figure 2.4 illustrates the cabling designations for one SDI input, two SDI outputs, three AES-3id 75ohm unbalanced inputs, and three AES-3id 75ohm unbalanced outputs.

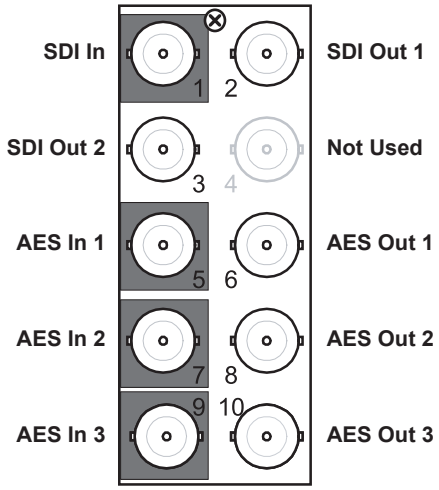


Figure 2.4 *Cable Connections for the SFS-8622-A*

Using DashBoard

Before proceeding, ensure that the DashBoard is installed on a computer connected to your facility network. The DashBoard software and user manual are available from the Ross Video website.

For More Information on...

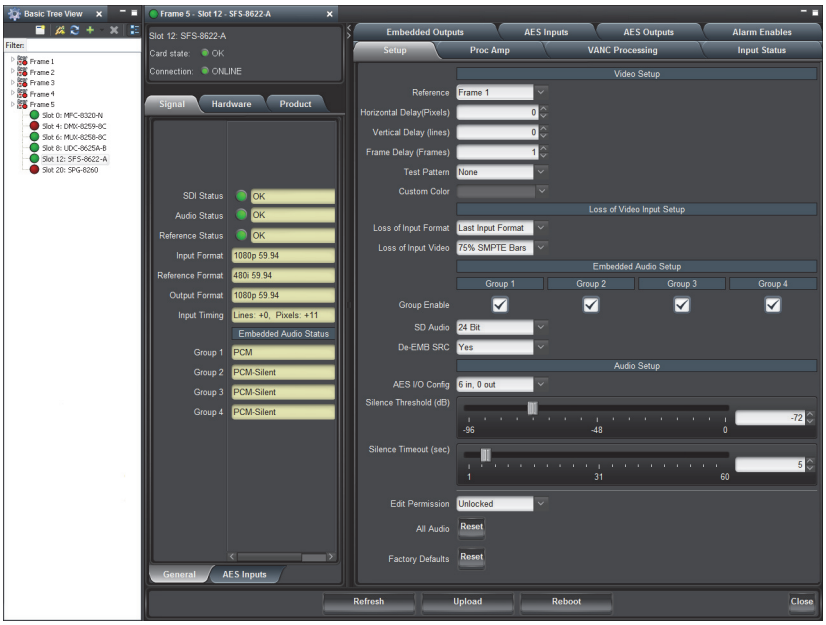
- using DashBoard, refer to the ***DashBoard User Manual***.

To launch DashBoard

1. Ensure that you are running DashBoard software version 6.1.0 or higher.
2. Launch DashBoard by double-clicking its icon on your desktop.
3. Ensure that the openGear frame with your card is displayed in the Tree View located on the left-side of the DashBoard window. It may take 30 seconds or more to update the Tree View. Consult the ***MFC-8300 Series User Manual*** and ***DashBoard User Manual*** should the Tree View not display your card.

To access a card in DashBoard

1. From the **Tree View**, expand the node for the openGear frame your cards are installed in. A list of cards installed in the frame is now displayed. In the example below, the node for Frame 5 is expanded to show a list of six cards including an SFS-8622-A.
2. Double-click the node for a card to display its menus in the **Device View** of DashBoard (right-side of the DashBoard window).



Example of an SFS-8622-A in DashBoard

Software Upgrades

This section provides instructions for upgrading the software for your card using the DashBoard Control System.

To upload software to the card

1. Contact Ross Technical Support for the latest software version file.
2. In DashBoard, double-click the card its status indicator in the **Basic Tree View**.
3. From the **Device** tab, click **Upload** to display the **Select File for upload** dialog box.
4. Navigate to the *.bin upload file you wish to upload. DashBoard automatically selects the last directory that you loaded from.
5. Click **Open** to display a confirmation dialog box. This dialog box displays the selected upload file name, type, size, and the file creation date.
6. From the **Confirmation** dialog box, select one of the following:
   - **Cancel** — Select this option to cancel the upload of the file and return to the **Device View**.
   - **Continue** — Select this option to upload the file. While uploading, an **Uploading Progress** dialog box opens.

Notice — *Clicking the **Cancel** button while uploading will leave the card in an invalid state. Do not click **Cancel** unless the uploading progress has stopped completely for 60 seconds or more. If upload fails, repeat the upload process from DashBoard. If the upload process fails again, refer to the section "**Bootload Button**" on page 8-2.*

7. Monitor the upgrade progress bar displayed in DashBoard while the software is upgraded on your card.
8. To complete the upgrade process, you must reboot the card as follows:
   - From the **Device** tab, click **Reboot** to reboot card. The reboot process takes up to 30 seconds.

Note — *The communications processor of the card requires approximately 30 seconds to re-start and re-establish network communications.*

   - The card automatically saves all your settings before starting the reboot process.
   - The status of all the cards in the frame are grayed out until the reboot process is complete.

Video Setup

In This Chapter

This chapter provides a general overview of the user controls available on your card.

The following topics are discussed:

- Before You Begin
- Selecting a Reference Source
- Adding a Delay
- Adjusting with Video Proc Amps
- ANC Processing
- Additional Setup

Before You Begin

Each card provides a valid video output frame with formatted TRS codes. In certain conditions, however, the video output of the card will have to be re-synchronized and while doing so, the card will not be able to maintain a valid output. The following conditions will force a re-sync of the video output of the card:

- **Reference loss and reference re-acquired** — To provide a stable output, the card must have a stable reference.
- **Changes in the vertical (V) or horizontal (H) delay parameters** — A parameter change will force the SFS output to reset and restart the video output with the specified V/H offset. Note that changing the number of frames (F) of delay will not reset the output as long as the V/H parameters are constant.
- **Video input format change** — The card will auto-detect the video input format and if it is recognized as one of its supported formats, it will set its output to match it. While doing so, the output will be reset and re-started.

When the video input signal is locked to the selected external reference, the card will operate in Frame Delay mode. In this mode of operation, card will not be adding or dropping any frames.

It is important to understand that when the card is using the digital reference extracted from the SDI video input, the SDI video input signal must be stable at all times. Any glitches on this signal will likely cause the card video output to stop and restart, basically re-syncing the video output to the digital reference. Therefore, in practical applications, it will not be possible to switch the SDI video input from an upstream router without re-syncing the card video output. For this reason, it is strongly recommended not to use the SDI input as the reference, and to select instead one of the analog references. If the SDI video input signal happens to be locked to the selected analog reference, the card will be effectively operating in frame delay mode, as no frames drop/repeat will be occurring.

Selecting a Reference Source

The openGear frames support a distributed frame reference, allowing incoming reference signals to feed timing information to all cards in that frame. Thus, a single signal can be used for multiple cards. Alternatively, each card accepts a reference signal on the rear module to provide additional system timing flexibility.

Frame Rate Compatibility

Refer to **Table 3.1** for frame rate compatibility. Note that 720p, 1080i 60Hz, and 1080p 60Hz are supported with 60Hz frame rate references.

Table 3.1 Output/Reference Compatibility

Video Format	Reference Format									
	480i	1080i 59.94Hz	720p 59.94Hz	576i	1080i 50Hz	720p 50Hz	1080p 23.98Hz	1080psf 23.98Hz	1080p 24Hz	1080psf 24Hz
480i	✓	✓	✓							
720p 59.94Hz	✓	✓	✓							
1080i 59.94Hz	✓	✓	✓							
1080p 59.94Hz	✓	✓	✓							
1080p 29.97Hz	✓	✓	✓							
576i 50Hz				✓	✓	✓				
720p 50Hz				✓	✓	✓				
1080i 50Hz				✓	✓	✓				
1080p 50Hz				✓	✓	✓				
1080p 25Hz				✓	✓	✓				
1080psf 24Hz									✓	✓
1080psf 23.98Hz							✓	✓		
1080p 23.98Hz							✓	✓		

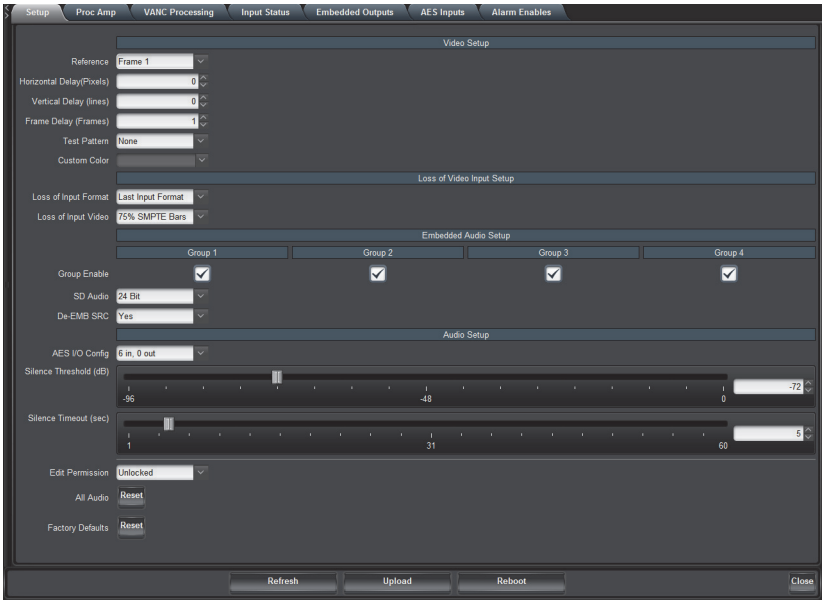
Selecting a Reference Source

If the **Reference source** is set to **Frame 1**, or **Frame 2**, and if the reference present is valid, the card is automatically set to Frame Sync mode. If a valid reference is selected, and then removed, the card will remain in Frame Sync mode but will flywheel. This means that the card will be dropping or repeating the display of some video input frames as necessary to keep the input to output delay within the specified range of F to F+1 frames delay. The frame drop/repeat occurs whenever the video input frame start point crosses over the video output frame start point.

The card has built-in hysteresis to avoid visible artifacts if the input and output timing alignment oscillates around the drop/repeat cross-over point.

To select a reference source for the card

1. From the **Device View** in DashBoard, select the **Setup** tab.



Setup Tab

2. Select a reference input from the **Reference Setup** area. Refer to **Table 6.4** on page 6-5 for a list of options. If you are using **Frame 1** or **Frame 2** as the reference, the card input video frame rate must match the reference frame rate.

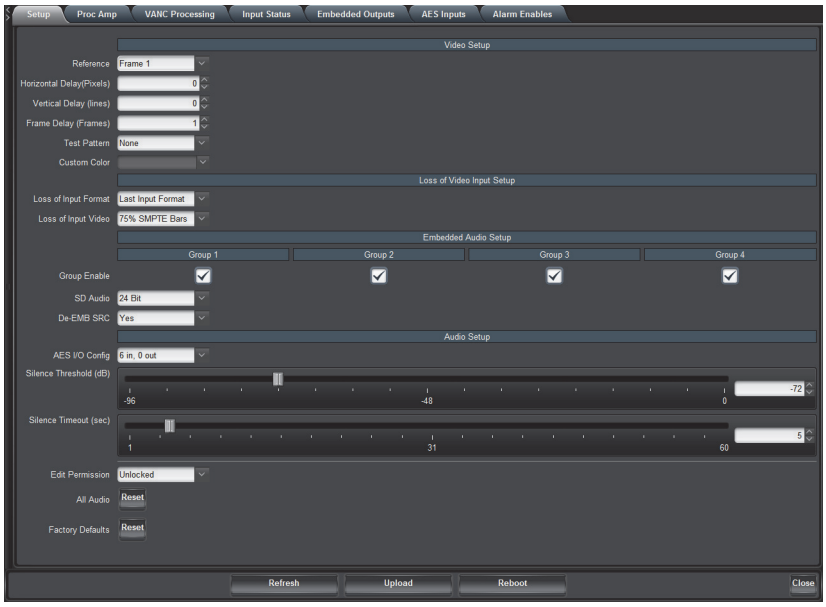
Adding a Delay

The card is suited to solve system timing problems where the difference in delay is constant between two paths. An example of this would be a situation where a downstream switcher needs to have clean switches between the output of a production switcher and some of the same input sources fed to the production switcher. The card cannot completely correct badly missed switches, signal drops, or similar issues. Note that the **Input Timing** field of the **Signal** tab reports the input video timing with respect to the selected analog reference signal.

This section summarizes how to select and apply a type of delay to the output.

To add a delay to the video output

1. From the **Device View** in DashBoard, select the **Setup** tab.



Setup Tab

2. Use the **Horizontal Delay** field to specify the horizontal delay, relative to the selected reference. Adjustments are made in pixel increments.
3. Use the **Vertical Delay** field to specify the vertical delay, relative to the selected reference. Adjustments are made in line increments.
4. Use the **Frame Delay** field to specify the delay in number of frames. Frame delay adjustments are made in full frame increments.

Adjusting with Video Proc Amps

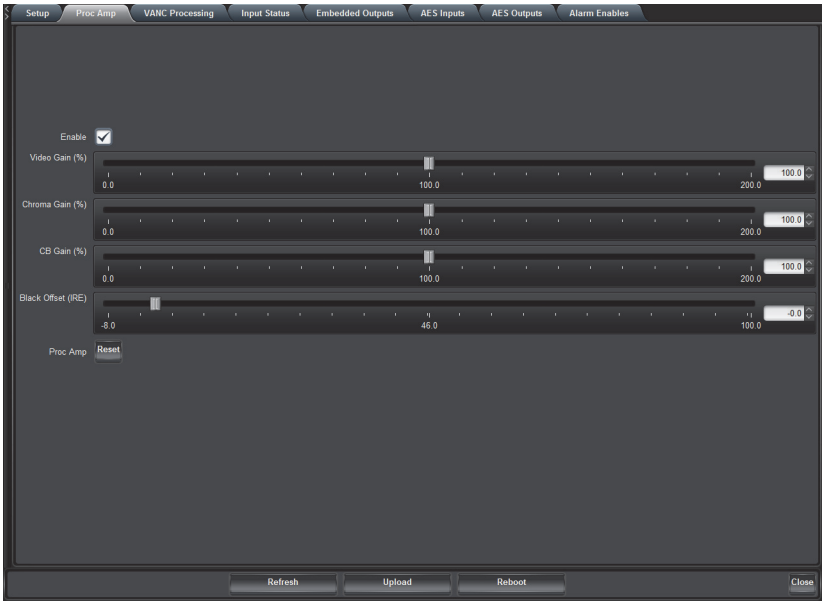
The output on the card has a Proc Amp that can adjust the black offset, the video gain, the C_r gain, and the C_b gain. This section briefly outlines how to adjust the options available in the **Proc Amp** tab.

For More Information on...

- the options in the Proc Amp tab, refer to **Table 6.6** on page 6-8.

To adjust the output using a Proc Amp

1. From the **Device View,** select the **Proc Amp** tab.



Proc Amp Tab

2. Select the **Enable** box to ensure the color adjustments are applied. The **Enable** box must be selected in order for any color correction to take effect on the output. Note that the Proc Amp controls are not applied when the outputs are assigned to Test Pattern.
3. Use the **Video Gain** slider to adjust the video gain. This gain control affects the luminance (Y) and the color difference signals (Cr and Cb).
4. Use the **Chroma Gain** slider to adjust the chrominance video signal components (Cr and Cb) simultaneously.
5. Use the **CB Gain** slider to adjust the Cb component of the chrominance video signal.
6. Use the **Black Offset** slider to adjust the Black Offset you want to apply.

Operating Tip — *To reset the Proc Amps settings to the default values, click **Reset** and then **Yes** in the **Confirm** dialog.*

ANC Processing

Ancillary Data (ANC) is the non-video data that can be embedded within the SDI signal, such as audio, audio metadata, timecode, closed caption data, AFD, and payload identification. This section briefly summarizes the ANC processing features of the card.

HANC Processing

SMPTE 291M formatted ancillary packets, such as SMPTE 12M-2 (timecode), that are found in the Luma portion (Y stream) of the HANC in the video signal (other than audio related packets) will be passed from input to output.

VANC Processing

The card provides options for replacing the full active portion of selected lines of video with black. The **VANC Processing** tab is divided into separate sub-tabs for each format to provide selection of the lines. This enables you to individually select any combination of lines, from line 1 up to the third line after the active video for the current video format. For interlaced formats, the lines in the two fields are separately configured. **Table 3.2** lists the allowable line selections based on format.

Table 3.2 VANC Processing — Line Selection

Format	Field 1 Lines	Fields 2 Lines
1080p	1-44	-
1080i	1-23	562-586
720p	1-28	-
576i	1-25	313-338
480i	1-23	264-285

To delete the VANC components in a line

1. Display the **Device View** in DashBoard for the SFS-8622-A you wish to configure.
2. Select the **VANC Processing** tab.
3. Select the sub-tab, located at the bottom of the **VANC Processing** tab, for the applicable video format.

Note — *Use the **1080i** sub-tab when using an 1080pSF input signal.*

4. In the **Line** column, locate the line you wish to delete the VANC components for. Notice for interlaced formats that the **Line** column on the left lists the lines in **Field 1**, and the **Line** column on the right lists the lines in **Field 2**.
5. To delete the VANC components:
   - **for a specific line** — select **Strip** for that line. The default for each line is **Pass**.

- **for all lines of a video format** — click the **Strip** button located near the bottom of the applicable sub-tab.

Operating Tip — *To pass the VANC components without modification for all lines in a specific video format, click the **Pass** button located near the bottom of the sub-tab.*

Additional Setup

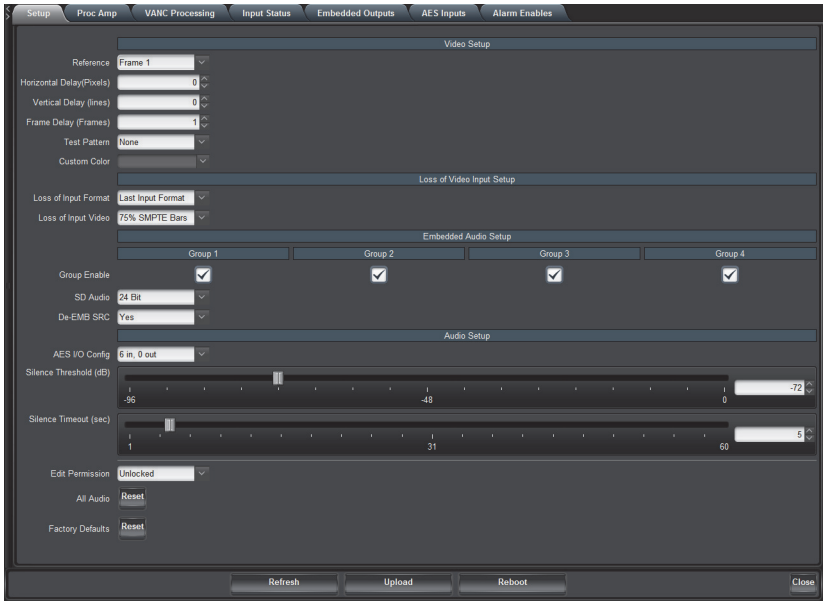
If required, you can configure the card to output a test pattern or specify what to output during a loss of the input signal.

Loss of Input

The card enables you to specify the output during a loss of input, or during a change of input format. The embedded audio will also go silent if passing from input to output (when AES is not selected).

To chooses the type of output produced if the video input is lost

1. From the **Device View** in DashBoard, select the **Setup** tab.



Setup Tab

2. Use the **Loss of Input Format** field to specify the video format to use when the card experiences a loss of input. Refer to **Table 6.4** on page 6-5 for a list of options.
3. Use the **Loss of Input Video** field to select an output to display when the card experiences a loss of input. Refer to **Table 6.4** on page 6-5 for a list of options.

Note — *If you selected Freeze, ensure that the Loss of Input Format field is set to the same format as the input video signal or to Last Input Format.*

4. If you selected **Custom Color** in step 2:
   - Use the **Custom Color** menu to set the Hue, Saturation, and Luminance levels of the custom color to be displayed as the Loss of Input. You can also position the cross hairs on the provided color grid to select a color.
   - Confirm that the field beneath the color grid is filled with the selected color.
   - Click **OK** to apply the selected color.

Selecting a Test Pattern

You can also specify the type of internally generated test pattern to output.

To choose the type of test pattern to output

1. From the **Device View** in DashBoard, select the **Setup** tab.
2. Use the **Test Pattern** field to select a pattern to display on the output. Refer to **Table 6.4** on page 6-5 for a list of options.
3. If you selected **Custom Color** in step 2:
   - Use the **Custom Color** menu to set the Hue, Saturation, and Luminance levels of the custom color to be displayed as the Tess Pattern. You can also position the cross hairs on the provided color grid to select a color.
   - Confirm that the field beneath the color grid is filled with the selected color.
   - Click **OK** to apply the selected color.

Note — *When selecting a test pattern as the Loss of Input Video, the card will output the video in whatever format is selected in the Loss of Input Format field.*

Audio Setup

In This Chapter

This chapter provides a general overview of the options in DashBoard for configuring the audio features of your card.

The following topics are discussed:

- Selecting an AES Configuration
- Configuring the AES Inputs
- Configuring the AES Outputs
- Embedded Outputs
- Embedding PCM and Non-PCM Signals

Selecting an AES Configuration

Each card enables you to configure the six AES inputs/outputs in one of the following configurations: 6 inputs, 3 inputs plus 3 outputs, or 6 outputs.

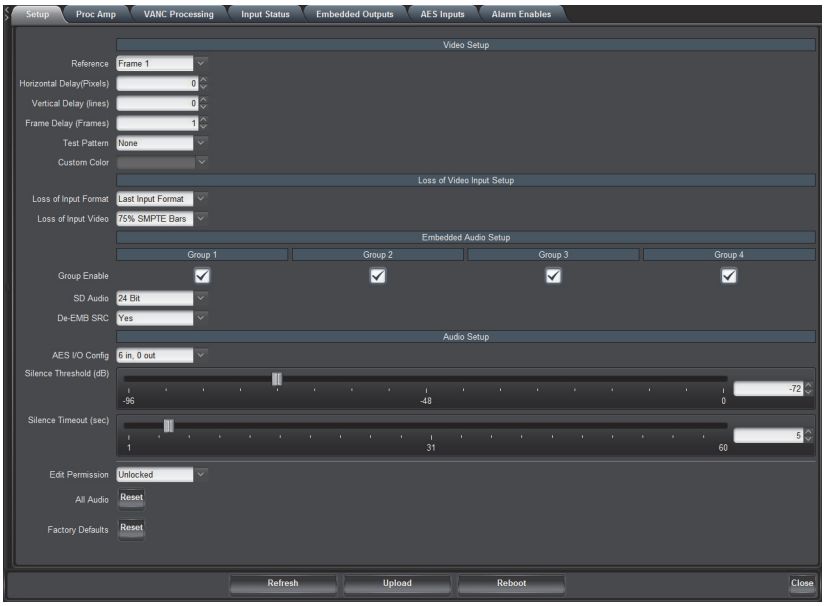
Note — *The card will detect and indicate async for any audio input that is an asynchronous audio input, or has a sample rate other than 48kHz.*

For More Information on...

- the menus and parameters available in the **Setup** tab, refer to the section "**Setup Tab**" on page 6-5.
- alarm options for AES sources, refer to the section "**Alarm Enables Tab**" on page 6-14.

To specify the AES configuration

1. From the **Device View**, select the **Setup** tab.



Setup Tab

2. Specify the configuration for your card by selecting an option from the **AES I/O Config** menu.

Note — *Changing the AES I/O Config setting may default some audio source settings if they become invalid.*

3. If you have selected a configuration with inputs (6 in, 0 out or 3 in, 3 out), proceed to the section "**Configuring the AES Inputs**" on page 4-4.
4. If you have selected a configuration with outputs (0 in, 6 out or 3 in, 3 out), proceed to the section "**Configuring the AES Outputs**" on page 4-5.
5. Use the **SD Audio** menu to specify the type of SD audio to embed. Refer to **Table 6.4** on page 6-5 for a list of options.

6. Use the **De-EMB SRC** menu to apply the Sample Rate Converter on all de-embedded audio groups from the input source.

Note — *When the De-EMB SRC is enabled, the Word Length status field always reports that the audio word length is 24bit.*

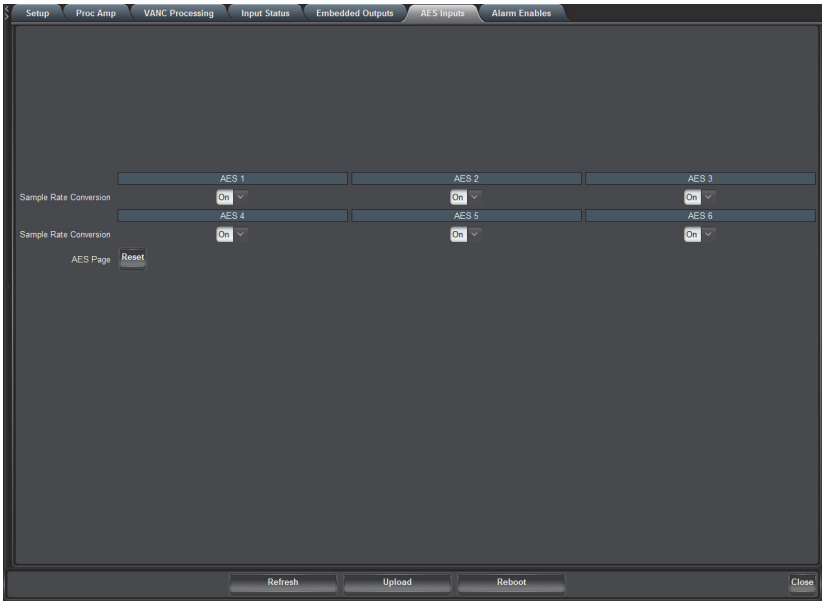
7. Use the **Silence Threshold** slider to specify a threshold value for silence. Audio with an amplitude (dBFS) equal to or below this value will be considered silent.
8. Use the **Silence Timeout** slider to define how long (in seconds) that audio is silent before an alarm is raised in the **Audio Status** field of the **Signal** tab.

Configuring the AES Inputs

This section briefly summarizes how to configure the options in the AES Inputs tab when the AES I/O Config is set to 6 in, 0 out, or 3 in, 3 out.

To configure the AES inputs

1. From the **Device View**, select the **AES Inputs** tab.



AES Inputs Tab — AES IO Config is set to 6 in, 0 out

2. To enable the SRC of the AES source, select the **Sample Rate Conversion** box.

Configuring the AES Outputs

This section briefly summarizes how to configure the options in the AES Outputs tab when the AES I/O Config is set to 0, in, 6 out or 3 in, 3 out.

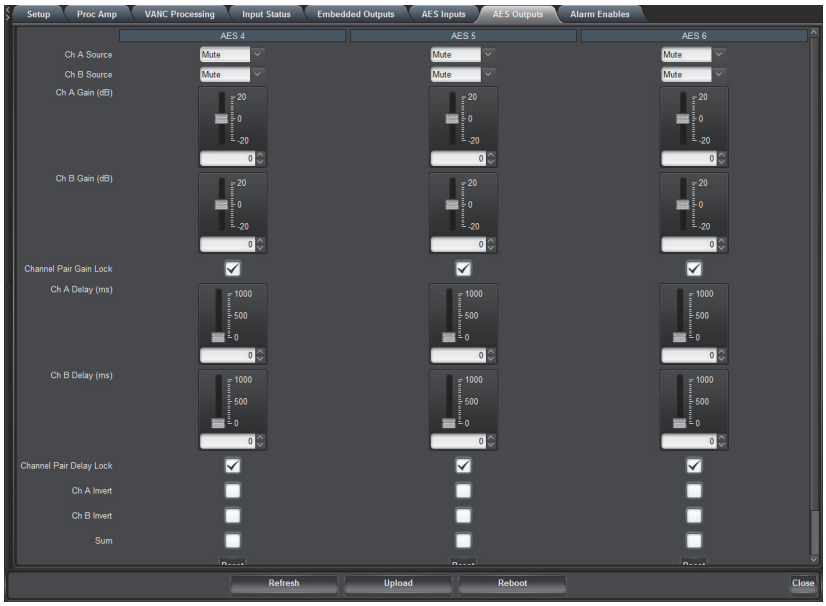
- If the **AES I/O Config** is set to **0 in, 6 out** — there are two sub-tabs displayed at the bottom of the AES Outputs tab. The first tab enables you to configure AES 1-3, while the second tab enables you to configure AES 4-6.
- If the **AES I/O Config** is set to **3 in, 3 out** — there are no sub-tabs located at the bottom of the AES Outputs tab.

The embedded audio output Proc Amp adjustments are applied in the following order:

1. **Delay** — This option enables you to adjust the delay of the audio channel. If you have enabled the Delay Lock feature, changing the delay value for one channel automatically changes the value for the other channel.
2. **Gain** — This option provides a +/- 20dB gain range in 1dB increments. If you have enabled the Gain Lock feature, changing the gain value for one channel automatically changes the value for the other channel.
3. **Invert** — This option enables you to invert the polarity of the audio signal for the selected channel.
4. **Sum** — This option enables both channels to carry the average of the two selected input channels (A+B/2).

To configure the AES outputs

1. From the **Device View**, select the **AES Outputs** tab.



AES Outputs Tab — AES IO Config is set to 3 in, 3 out

2. Use the associated **Ch# Source** menu to specify the channel source of an AES output.
3. To set the gain for a channel of an AES output, use the associated **Ch # Gain** slider to select a value between -20dB and 20dB.
4. To set the delay for a channel of an AES output, use the associated **Ch # Delay** slider to select a value between 0ms and 500ms.
5. To invert a channel of an AES output, select the associated **Ch # Invert** box.

6. To sum the input (A+B/2) of the AES output, select the **Sum** box.
7. Repeat steps 2.- 6. for each AES output you wish to configure.

Embedded Outputs

Your card also includes options for configuring how audio is embedded for SDI video outputs.

For More Information on...

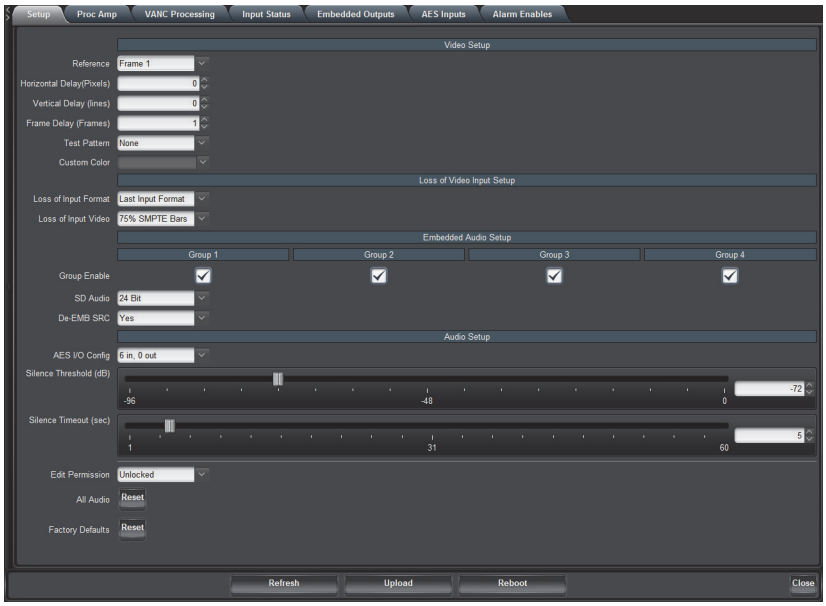
- the embedded audio menus and parameters available in the **Setup** tab, refer to the section "**Setup Tab**" on page 6-5.
- the menus and parameters available in the **Embedded Outputs** tab, refer to the section "**Embedded Outputs Tab**" on page 6-11.

Setting up Embedded Outputs

Before proceeding, you will need to configure some of the embedded audio options in the **Setup** tab.

To set up the embedded audio for an output source

1. From the **Device View**, select the **Setup** tab.



Setup Tab

2. In the **Embedded Audio Setup** area, select the **Enable** box for the group(s) to embed in the video output.
3. Use the **SD Audio** menu to specify the type of SD audio to embed. Refer to **Table 6.4** on page 6-5 for a list of options.
4. Use the **De-EMB SRC** menu to apply the Sample Rate Converter on all de-embedded audio groups from the input video source. Refer to the section "**Embedding PCM and Non-PCM Signals**" on page 4-10 for details.

Note — *When the De-EMB SRC is enabled, the Word Length status field always reports that the audio word length is 24bit.*

5. Use the **Silence Threshold** slider to specify a threshold value for silence. Audio with an amplitude (dBFS) equal to or below this value will be considered silent.

6. Use the **Silence Timeout** slider to define how long (in seconds) that audio is silent before an alarm is raised in the **Audio Status** field of the **Signal** tab.

Configuring the Embedded Output Groups

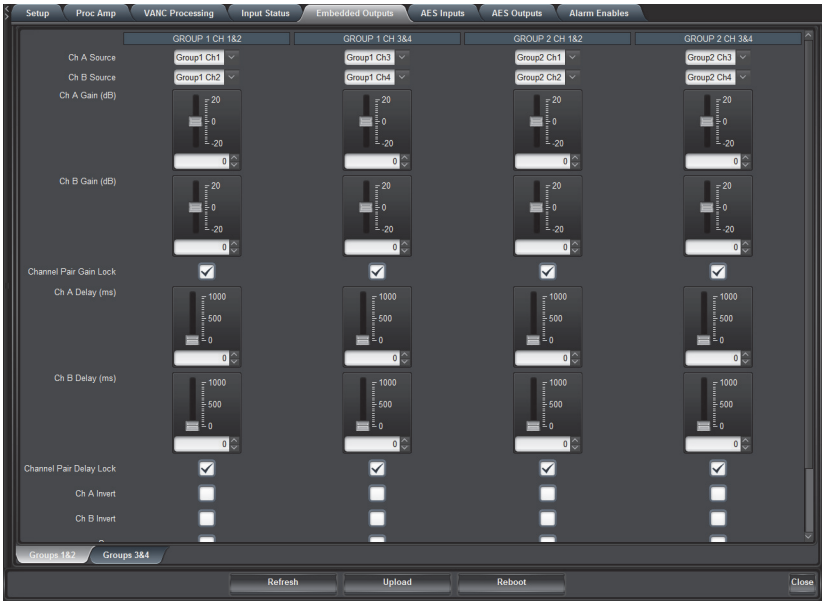
This section briefly outlines how to configure the options in the **Embedded Output** tab. Refer to **Table 6.10** on page 6-11 for details on the options in this tab.

The embedded audio output Proc Amp adjustments are applied in the following order:

1. **Delay** — This option enables you to adjust the delay of the audio channel. If you have enabled the Delay Lock feature, changing the delay value for one channel automatically changes the value for the other channel.
2. **Gain** — This option provides a +/- 20dB gain range in 1dB increments. If you have enabled the Gain Lock feature, changing the gain value for one channel automatically changes the value for the other channel.
3. **Invert** — This option enables you to invert the polarity of the audio signal for the selected channel.
4. **Sum** — This option enables both channels to carry the average of the two selected input channels (A+B/2).

To configure the embedded audio outputs

1. From the **Device View**, select the **Embedded Outputs** tab.



Embedded Outputs — Groups 1&2 Tab

2. If required, select the sub-tab that includes the embedded group you wish to configure.
3. To map a channel:
   - From the associated **Ch # Source** menu, select an audio source that is inserted into the embedded group if present.
   - If the selected source is not present on the input video, silence is embedded.
4. To set the gain for an output channel, use the associated **Ch # Gain** slider to select a value between -20dB and 20dB.

5. To set the delay for an output channel, use the associated **Ch # Delay** slider to select a value between 0ms and 1000ms.
6. To invert an output channel, select the associated **Ch # Invert** box.
7. To sum the output channel pair (A+B/2), select the **Sum** box.
8. Repeat steps 2.- 7. for each output channel you wish to configure.
9. Repeat for each group/channel pair you wish to configure.

Embedding PCM and Non-PCM Signals

This section provides additional information on the Processing Amplifiers (Proc Amps) for the audio outputs on the card.

Embedding PCM Signals

Each card can embed PCM audio from two sources: the AES input or from the embedded audio of the source video. Processing also includes embedding channel status data as per **Table 7.6**.

Embedding Non-PCM Signals

You can configure the card to embed non-PCM signals, such as Dolby® Digital and Dolby® E, using the options available in DashBoard. However, when embedding the non-PCM signal, the A and B channels of the input signal must be embedded on Channels 1 and 2, or Channels 3 and 4 of a given group. For example, you would embed AES1A in Group1Ch1, and AES1B in Group1Ch2.

To embed non-PCM signals

1. Display the **Device View** in DashBoard for the card you wish to configure.
2. Select the **AES Inputs** tab.
3. Set the **Sample Rate Conversion** to **Off** for the required AES or embedded source.
4. Select the **Embedded Outputs** tab.
5. In the **Embedded Outputs** tab, select the sub-tab for the output group that you wish to configure.
6. Clear the applicable **Sum** box to disable the channel summing.
7. Set the applicable **Ch # Gain** to **0**.
8. Clear the applicable **Ch # Invert** box to disable inverting on the channel.
9. Ensure that the **Delay** values of the channels match.

Card-edge Monitoring

In This Chapter

This chapter provides a general overview of the user controls available on the card.

The following topics are discussed:

- Card Overview
- Control and Monitoring Features

Card Overview

This section provides a general overview of the SFS-8622-A components. For information on the LEDs available on the card-edge, refer to the section "**Control and Monitoring Features**" on page 5-3.

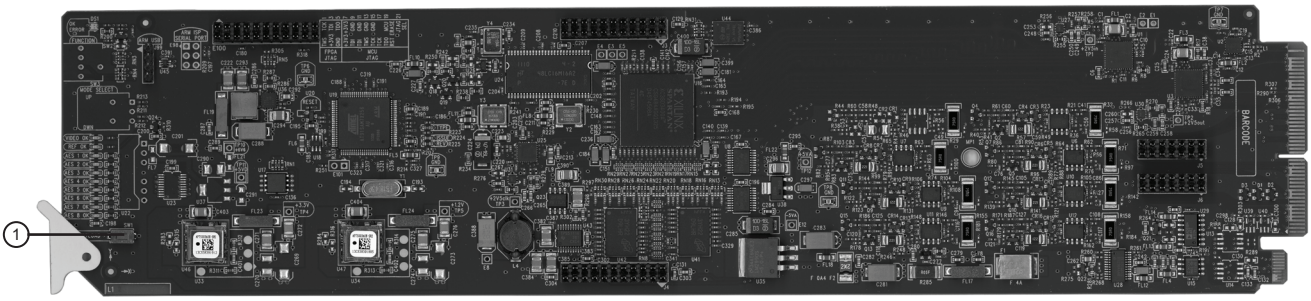


Figure 5.1 *Card Components*

1. Bootload Button (SW1)

SW1 is used for factory service in the unlikely event of a complete card failure. Do not press this button unless instructed to do so by Ross Technical Support personnel.

For More Information on...

- the LEDs located on the card-edge, refer to the section "**Control and Monitoring Features**" on page 5-3.

Control and Monitoring Features

This section provides information on the card-edge LEDs. Refer to **Figure 5.2** for the location of the LEDs and controls.

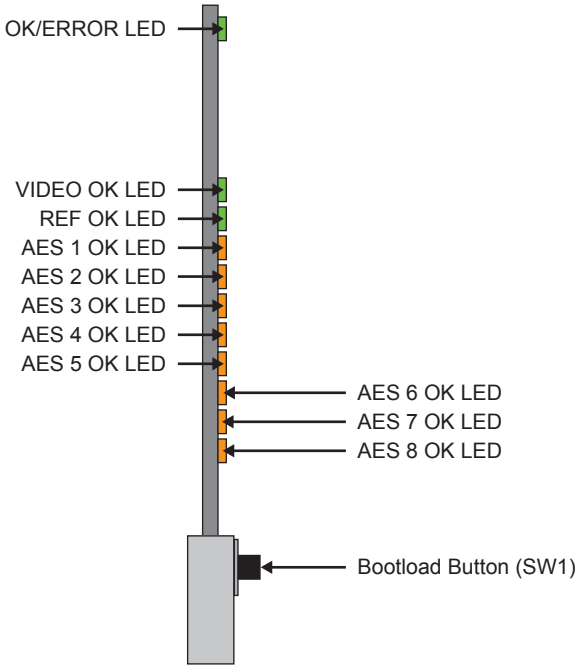


***Figure 5.2** Card-edge LEDs*

Status and Selection LEDs

Basic LED displays and descriptions are provided in **Table 5.1**.

Table 5.1 Card-edge LEDs

LED	Color	Display and Description
OK/ERROR	Green	When lit green, this LED indicates that the card is functioning normal and that no anomalies have been detected. The following conditions must be satisfied: • a valid input signal is present • a valid reference signal is present when a reference is required, and that the reference standard matches the input standard.
	Flashing Green	When flashing green, this LED indicates the bootloader is waiting for a software upload.
	Flashing Green and Orange	When lit green with flashing orange, this LED indicates there is a signal error such as a missing or invalid input or reference.
	Orange	When lit orange, this LED indicates the card is powering on.
	Red	When lit red, this LED indicates the card is not operational.
	Off	When off, this LED indicates there is no power to the card.

Table 5.1 Card-edge LEDs

LED	Color	Display and Description
VIDEO OK	Green	When lit, this LED indicates that the video input is valid.
	Flashing Green	When flashing, this LED indicates that video is present, but the input format is unsupported.
	Off	When unlit, this LED indicates the absence of an input signal.
REF OK	Green	When lit green, this LED indicates a valid reference signal.
	Off	When unlit, this LED indicates that a reference signal is not present, or is not supported.
AES # OK	Orange	When lit, an LED indicates a valid signal is detected on the corresponding AES input.
	Off	When unlit, an LED indicates the specified AES signal is configured as an output.

DashBoard Menus

In This Chapter

This chapter summarize the menus, items, and parameters available from DashBoard for your card. Parameters marked with an asterisk (*) are the factory default values.

Operating Tip — *Wait 30 seconds after the last setting change to ensure all changes are saved to the non-volatile memory of the card.*

The following topics are discussed:

- Status Tabs
- Setup Tab
- Proc Amp Tab
- VANC Processing Tab
- Input Status Tab
- Embedded Outputs Tab
- AES Inputs Tabs
- AES Outputs Tabs
- Alarm Enables Tab

Status Tabs

This section summarizes the read-only information displayed in the Status tabs. The fields in the **Status** tabs vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field.

Signal Tab

Table 6.1 summarizes the read-only information displayed in the **Signal** tab.

Table 6.1 Signal Tab Items

Tab Title	Item	Parameters	Description
General	SDI Status	OK	A valid SDI signal is detected on the input, the format is supported, and the selected reference signal is supported and compatible
		No Input	An invalid SDI signal is detected on the input
		Incompatible	A valid SDI signal detected on the input, the format is supported but the selected reference format selected is not compatible (e.g. an 480i input with a PAL reference signal)
		Non-Sync Video	A valid SDI signal detected on the input, the format is supported, the selected reference format is supported but a reference lock is not occurring
		Group Not Present	At least one embedded audio group is missing from the valid, supported format SDI input signal
		Group Channel Silent	At least one embedded audio channel from the valid, supported SDI input signal has an amplitude at or below the Silence Threshold
	Audio Status	OK	A valid AES signal (PCM or non-PCM) is detected on all the inputs
		Source Missing	No valid AES signal detected on at least one input
		Source Async	At least one AES input is non-synchronous relative to the selected reference source on the receiving card
		AES Input Silent	At least one AES input signal has an amplitude at or below the Silence Threshold
		AES Input Not Present	At least one AES input signal has an amplitude at or below the Silence Threshold

Table 6.1 Signal Tab Items

Tab Title	Item	Parameters	Description
General	Audio Status	Group 4 Reduced to 20bit	Reduces Group 4 of the embedded audio to 20bit while the other three groups of embedded audio are 24bit
	Reference Status	OK	Indicates that a valid reference source is present
		No Ref - Video	The following conditions are occurring: • Card reference is set to Frame 1 or Frame 2 • A valid reference signal is not present • Card has gone to Video Timing Mode
		No Ref - Free Run	The following conditions are occurring: • Card has detected an invalid[c] reference format • Input video is missing or invalid • Card has switched to Free Run Mode
	Input Format	#	Indicates the input video format
	Reference Format	#	Indicates the reference video format
	Output Format	#	Indicates the output video format
	Input Timing	Lines: #, Pixels: #	Indicates the timing offset between the video input signal and the reference signal. The unit of measure is lines and pixels with respect to the input video format.
	Embedded Audio Status - Group #	PCM	Indicates the status of the specified embedded audio group
		No Input	
		PCM-Silent	
		Non-PCM	
		Async	
		Mixed	
		Not Present	One of the audio channel pairs are not detected
AES Inputs	AES #	PCM	Indicates the presence of the specified AES input
		No Input	
		AES Input Async	
		PCM-Silent	
		Non-PCM	
		Async	
		Mixed	

Hardware Tab

Table 6.2 summarizes the read-only information displayed in the **Hardware** tab.

Table 6.2 Hardware Tab Items

Tab Title	Item	Parameters	Description
Hardware	HW Status	OK	Indicates any problems with the card hardware components
		FPGA load invalid	
		Incomp I/O module	
		Current out of spec	
		Internal Error	
	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption in milliamperes
	CPU Headroom	#	Processing power available
	RAM Available	#/##	On-board processing memory available
	Uptime (h)	#	Displays the number of hours since the last reboot of the card
	Configuration Bank	#	Storage count

Product Tab

Table 6.3 summarizes the read-only information displayed in the **Product** tab.

Table 6.3 Product Tab Items

Tab Title	Item	Parameters	Description
Product	Product	SFS-8622-A	Indicates the product name
	Supplier	Ross Video Ltd.	
	Board Rev	##	Indicates the board version of your card
	Rear Module	#	Type of rear module in the slot
	Board S/N	######	Indicates the serial number of your card
	Software Rev	##.##	Indicates the software version
	Firmware Rev	#.###	Indicates the firmware version
	Daughter Card Type	This field is not implemented.	

Setup Tab

Table 6.4 summarizes the **Setup** options available in DashBoard.

Table 6.4 Setup Menu Items

Menu Title	Item	Parameters	Description
Video Setup	Reference	Frame 1*	Assigns the external analog reference connected to **REF 1** port on the openGear frame
		Frame 2	Assigns the external analog reference connected to **REF 2** port on the openGear frame
		Video	Reference is taken from the **SDI IN** video input on the rear module
	Horizontal Delay (Pixels)	0 - #[a]	Adjusts the horizontal delay with respect to the selected reference. Refer to **Table 6.5** for value ranges.
	Vertical Delay (lines)	0 - #[a]	Specifies the vertical delay with respect to the selected reference. Refer to **Table 6.5** for value ranges.
	Frame Delay (Frames)	1* - 28	Specifies the number of frames of delay with respect to the selected reference
	Test Pattern	None*	Disables the test pattern feature
		Black	Specifies the type of test pattern to output. Note that the test pattern replaces all of the output picture but not the HANC, while the VANC is blanked.
		Blue	
		Custom Color	
		75% Color Bars	
		100% Color Bars	
		75% SMPTE Bars	
		Matrix Pathological	
		Luma Ramp	
		Y/C Ramp	
	Custom Color	#	Select this drop down to display a dialog that enables you to configure the Custom Color parameter. This Custom Color will be used as a Test Pattern and Loss of Input when those fields are set to Custom Color.
Loss of Video Input Setup	Loss of Input Format	Last Input Format*	Forces the output video standard during a loss of input
		#	

Table 6.4 Setup Menu Items

Menu Title	Item	Parameters	Description
Loss of Video Input Setup	Loss of Input Video	Black	Specifies the video output in the event of a loss of video input
		Blue	
		Custom Color	Sets the output to a custom color in the event of a loss of video input. Use the provided Custom Color menu to configure the color.
		75% SMPTE Bars	Specifies the video output in the event of a loss of video input
		Matrix Pathological	
		Freeze*	Displays the last captured frame of video from the input signal. Ensure that the Loss of Input Format is set to the same format as the input video signal or set to Last Input Format. Note that a valid input signal must be captured in order that the output video is valid.
Embedded Audio Setup	Group Enable - Group #	Selected*	Determines if the specified audio group is inserted in the SDI video output or not
		Cleared	
	SD Audio	20 Bit*	Embeds 20bits
		24 Bit	Embeds 24bits
		Auto	Embeds 20-24bit depending on the audio source and the number of bits
	De-EMB SRC	No	Sample Rate Converter (SRC) is not applied, before the Frame Sync, to any of the channels in the SDI input
		Yes*	Applies the SRC on the audio channels in the video input before processed by the Frame Sync
	AES I/O Config	6 in, 0 out	Card is configured to manage six AES inputs and no AES outputs
		0 in, 6 out	Card is configured to manage no AES inputs, but does manage six AES outputs
		3 in, 3 out	Card is configured to manage three AES inputs and three AES outputs. AES connections 1-3 on the rear module are now configured as inputs. AES connections 4-6 on the rear module are now configured as outputs. Refer to **Figure 2.4** for cabling details.
	Silence Threshold (dB)[b]	-96 to 0	Audio equal to or less than the specified threshold value is considered silent
	Silence Timeout (sec)[c]	1 to 60	Audio silent for longer than the specified value raises an alarm

Table 6.4 Setup Menu Items

Menu Title	Item	Parameters	Description
	Edit Permission	Unlocked*	All menu options are unlocked and can be edited
		Locked	All menu items, except this one, are locked and read-only
	All Audio	Reset	Resets the parameters in the AES Inputs and Embedded Outputs tabs only to factory defaults
	Factory Defaults	Reset	Resets all parameters to factory defaults except for the AES I/O Config setting

a. The default value is 0.
b. The default value is -72dB.
c. The default value is 5 seconds.

Delay Ranges

The parameters can be adjusted from 0 to a maximum limit that depends on the video format.

Table 6.5 Delay Range

Format	Range of Values	
	Horizontal Delay (pixels)	Vertical Delay (lines)
480i 59.94Hz	0-857	0-524
576i 50Hz	0-863	0-624
1080p 60Hz	0-2199	0-1124
1080p 59.94Hz	0-2199	0-1124
1080p 50Hz	0-2639	0-1124
1080i 60Hz	0-2199	0-1124
1080i 59.94Hz	0-2199	0-1124
1080i 50Hz	0-2639	0-1124
1080p 30Hz	0-2199	0-1124
1080p 29.97Hz	0-2639	0-1124
1080p 25Hz	0-2749	0-1124
1080p 24Hz	0-2749	0-1124
1080pSF 24Hz	0-2749	0-1124
1080pSF 23.98Hz	0-2749	0-1124
1080pSF 23.98Hz	0-1649	0-1124
720p 59.94Hz	0-1649	0-749
720p 50Hz	0-1979	0-749

Proc Amp Tab

Table 6.10 summarizes the **Proc Amps** options available in DashBoard.

Table 6.6 Proc Amps Menu Items

Menu Title	Item	Parameters	Description
	Enable	Selected	Enables the Proc Amp using the displayed settings for the selected output
		Cleared*	The Proc Amp color correction is not applied to the selected output. Note that the Proc Amp controls are not applied when the output is Test Pattern.
	Video Gain (%)	0 to 200[a]	Adjusts the output video gain level
	Chroma Gain (%)	0 to 200[a]	Adjusts the card output chroma gain percentage (C_b and C_r simultaneously)
	CB Gain (%)	0 to 200[a]	Adjusts the output C_b gain
	Black Offset (IRE)	-8 to 100[b]	Adjusts the output black level of the card
	Proc Amp	Reset	Resets all Proc Amp controls to the factory default values

a. The default value is 100.
b. The default value is 0.

VANC Processing Tab

Table 6.7 summarizes the **VANC Processing** options available in DashBoard.

Note — *Use the **1080i** sub-tab when using an 1080pSF input signal.*

Table 6.7 VANC Processing Menu Items

Menu Title	Item	Parameters	Description
480, 576, 1080i	Line	#[a]	Indicates the specific line the VANC components will be deleted from
	Field #	Pass*	VANC components are passed unmodified to the card output
		Strip	VANC components are deleted from the card output
720p, 1080p	Line	#[a]	Indicates the specific line the VANC components will be deleted from
	Option	Pass*	VANC components are passed unmodified to the card output
		Strip	VANC components are deleted from the card output
	All Lines	Pass	All VANC components are passed unmodified to the card output
		Strip	All VANC components are deleted from the card output

a. The range is dependent on the format.

Input Status Tab

This section summarizes the sub-tabs available in the **Input Status** tab.

Video Input & Embed Tab

Table 6.8 summarizes the read-only information displayed in the **Video Input & Embed** sub-tab.

Table 6.8 Video Input & Embed Menu Items

Menu Title	Item	Parameters	Description
	Input Format (read-only)	#	Format of the video input
	Input Errors (read-only)	#	Displays the count of the CRC errors on the video input. This 14bit counter is reset on loss of video, or when the **Reset** button is selected. The counter is non-latching, and rolls over from maximum count to zero. • SD formats — displays both active picture and full frame errors • HD, 3G formats — displays the total count of errors
	Error Count	Reset	Resets the CRC Errors field
Embedded Audio - Group #	Channel # (read-only)	PCM	Status of each group and channel of embedded audio
		No Input	
		PCM-Silent	
		Non-PCM	
		Async	
		Mixed	
	Word Length (read-only)	#bit	Word length of the audio in number of bits

Audio Tab

Table 6.9 summarizes the read-only information displayed in the **Audio** sub-tab.

Table 6.9 Audio Menu Items

Menu Title	Item	Parameters	Description
AES #	Ch # Status	No Input	Displays the status of the specified Channel input
		PCM	
		PCM-silent	
		Non-PCM	
		Async[a]	
	Word Length	#bit	Displays the number of bits of audio
	Emphasis	Present	The incoming AES signal is indicating 50/15 or CCiTT J.17 emphasis
		Not Present	The incoming AES signal is indicating no emphasis or the emphasis is not indicated
	Sample Rate	#	Displays the sample rate of the AES input

a. If the SRC is ON, an async AES signal is processed to be PCM and indicated as such.

Embedded Outputs Tab

Table 6.10 summarizes the **Embedded Outputs** options available in DashBoard. Note that Groups 1 and 2 are located on the first sub-tab, while Groups 3 and 4 are on the second sub-tab.

Table 6.10 Embedded Outputs Menu Items

Menu Title	Item	Parameters	Description
GROUP # **CH #**	Ch # Source	Mute	Configures the input source for the specified channel that is inserted in to the embedded group (if present)
		Group# Ch#*	
		AES #	
		#Hz Tone	
		#kHz Tone	
	Ch # Gain (dB)	-20 to +20[a]	• Adjusts the gain of the specified channel of audio • Select 0 when using non-PCM audio data
	Channel Pair Gain Lock	Selected*	Locks the Gain sliders of both channels together. If the values for the two channels are different, that change is maintained when the channels are locked.
		Cleared	Unlocks the Ch Gain sliders
	Ch # Delay (ms)	0* to 1000	Adjusts the delay of the specified audio channel
	Channel Pair Delay Lock	Selected*	Locks the Ch Delay slider of both channels together. If the values for the two channels are different, that change is maintained when the channels are locked.
		Cleared	Unlocks the Ch Delay sliders
	Ch # Invert	Selected	Inverts the audio signal of the specified channel
		Cleared	• Audio signal of the specified channel is not inverted • Use for non-PCM audio data
	Sum	Selected	Both channels will carry the average of the two input channels (A+B/2)
		Cleared*	Disables this feature
	Channel Pair	Reset	Resets the parameters for the specified channel pair only to the default values
	Groups #	Reset	Resets the parameters for all groups of the specified sub-tab to the default values

a. The default value is 0.

AES Inputs Tabs

Table 6.11 summarizes the **AES Inputs** tab available in DashBoard. Note that the number of AES inputs available depends on how the AES I/O Config is set on the Setup tab. Refer to **Table 6.4** on page 6-5.

Table 6.11 AES Inputs Menu Items

Menu Title	Item	Parameters	Description
AES #	Sample Rate Conversion	Off	SRC is not used on an input. Select this option when using non-PCM audio data
		On*	SRC is used on an input

AES Outputs Tabs

Table 6.12 summarizes the **AES Outputs** tab available in DashBoard. Note that the number of AES outputs available depends on how the AES I/O Config is set on the Setup tab. Refer to **Table 6.4** on page 6-5.

Table 6.12 AES Outputs Menu Items

Menu Title	Item	Parameters	Description
AES #	Ch # Source	Mute	Configures the input source for the specified channel that is inserted in to the embedded group (if present)
		Group# Ch#	
		# Tone	
	Ch # Gain (dB)	-20 to +20[a]	• Adjusts the gain of the specified channel of audio • Select 0 when using non-PCM audio data
	Channel Pair Gain Lock	Selected*	Locks the Gain slider of both channels together. If the values for the two channels are different, that change is maintained when the channels are locked.
		Cleared	Unlocks the Ch Gain sliders
	Ch # Delay (ms)	0* to 1000	Adjusts the delay of the specified audio channel
	Channel Pair Delay Lock	Selected*	Locks the Ch Delay slider of both channels together. If the values for the two channels are different, that change is maintained when the channels are locked.
		Cleared	Unlocks the Ch Delay sliders
	Ch # Invert	Selected	• Audio signal of the specified channel is not inverted • Use for non-PCM audio data
		Cleared*	The audio signal is not inverted
	Sum	Selected	Both channels will carry the average of the two input channels (A+B/2)
		Cleared*	Disables this feature
	Channel	Reset	Resets the parameters for the selected input to the default values
	AES Page #	Reset	Resets the indicated input parameters to the default values

a. The default value is 0.

Alarm Enables Tab

Table 6.13 summarizes the **Alarm Enables** options available in DashBoard.

Table 6.13 Alarms Menu Items

Menu Title	Item	Parameters	Description
Video Input & Reference Alarm	No Input	Selected*	SDI Status field reports a loss of input
		Cleared	Disables the alarm
	Invalid Input	Selected*	Input Format field reports when the input video is a format that is not accepted
		Cleared	Disables the alarm
	Incompatible Input	Selected*	Input Format field reports when the frame rate is not the same as the selected reference input
		Cleared	Disables the alarm
	Unlocked Input	Selected*	SDI Status field reports if the input become unlocked. This alarm can be caused due to a change of reference or video format.
		Cleared	Disables the alarm
	No Reference	Selected*	Reference Status field reports a loss of input conditions when they occur
		Cleared	Disables the alarm
Hardware	Incompat Rear Module	Selected*	HW Status field reports when a rear module is not compatible with the card
		Cleared	Disables the alarm
	Incompat Daughter Card	Selected*	This alarm is not implemented. Selecting or clearing this box has no effect.
		Cleared	
Embedded Input Audio - Group #	Group not present	Selected*	SDI Status field reports when a group is not present on the input
		Cleared	Disables the alarm
	Channel # Silent	Selected*	SDI Status field reports when the specified channel is detected as silent
		Cleared	Disables the alarm
AES Inputs - AES #	Input not present	Selected*	SDI Status field reports when the AES input is not detected
		Cleared	Disables the alarm
	Input Async	Selected*	Audio Status field in the General tab and the applicable AES field in the AES Inputs tab reports when the selected source is not synchronous to the input video or not a 48kHz sample rate
		Cleared	Disables the alarm

Table 6.13 Alarms Menu Items

Menu Title	Item	Parameters	Description
AES Inputs - AES #	Channel # Silent	Selected*	SDI Status field reports when the AES channel is detected as silent
		Cleared	Disables the alarm
Embedded Outputs - Group #	Source Missing	Selected*	Embedded Audio Status field reports when the selected source is not present or is silent
		Cleared	Disables the alarm
	Source Async	Selected*	Embedded Audio Status field reports when the selected source is not synchronous to the input video, or not a 48kHz sample rate
		Cleared	Disables the alarm
	SD 24Bit[a]	Selected*	Audio Status field reports when the selected configuration would embed 4 groups of 24bit audio in an SD output. Group 4 is down-sampled to 20bit audio.
		Cleared	Disables the alarm
	All Alarms	Set	Enables all alarms
	All Alarms	Clear	Disables all alarms

a. Note that when performing an analog to digital conversion of audio, the card produces 24bit resolution by default. When converting, ensure that you set the **SD Audio** option in the **Setup** tab to **20bit**. Otherwise, the card will output 24bit and an alarm is reported in the **Audio Status** field.

Specifications

In This Chapter

This chapter provides technical specification details. Note that specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications
- Channel Status Data Table

Technical Specifications

SDI Input

Table 7.1 SDI Input Technical Specifications

Parameter	Specification
Number of Inputs	1
SDI Data Rates and SMPTE Standards Accommodated	SMPTE 292M, SMPTE 259M, SMPTE 424M
Impedance	75ohm
Return Loss	>15dB to 1.5GHz >10dB to 3.00GHz
Equalization (Belden 1694A cable)	SD: < 300m (1000ft) HD: < 100m (300ft) 3G: < 60m (200ft)
Connector Type	BNC

SDI Outputs

Table 7.2 SDI Outputs Technical Specifications

Parameter	Specification
Number of Outputs	2
SDI Data Rates and SMPTE Standards Accommodated	SMPTE 292M, SMPTE 259M, SMPTE 424M
Impedance	75ohm
Return Loss	>15dB to 1.5GHz >10dB to 3GHz
Signal Level	800mV, +/- 10%
DC Offset	<50mV
Rise and Fall Time (20-80%)	SD: 600ps typical HD: 120ps typical 3G: 130ps typical
Overshoot	<10%
Connector Type	BNC

AES Inputs

Table 7.3 AES Inputs Technical Specifications

Parameter	Specification
Standards Accommodated	AES-3id-2001
Impedance	75ohm
Minimum Input	50mV p-p
Maximum Input	2.5V p-p @ 48kHz 1.5V p-p @ 96kHz
Minimum Audio Delay	SRC on: 1.35mS SRC off: 0.37mS
Sampling Rate	48kHz compliant with AES-3id or any rate from 32kHz to 96kHz with SRC on
Equalization	up to 800m (2,400ft) @ 48kHz up to 500m (1,500ft) @ 96kHz
Connector Type	BNC

AES Outputs

Table 7.4 AES Outputs Technical Specifications

Parameter	Specification
Standards Accommodated	AES-3id-2001
Impedance	75ohm
Output Level	1V p-p
Sampling Rate	48kHz
Connector Type	BNC

Environmental and Power Consumption

Table 7.5 Technical Specifications

Parameter	Specification
Operating Range	5°C to 40°C ambient
Total Power Consumption	12W

Channel Status Data Table

Table 7.6 shows the channel status bit information that is used for all output audio.

Table 7.6 Channel Status Data

Byte	Bit	Function	Transmitted
0	0	Professional or Consumer use of Channel Status Block	Professional (1)
	1	Normal Audio or Non-Audio Mode	Normal Audio (0)
	2-4	Emphasis	No Emphasis (100)
	5	Lock Indication	Locked (0)
	6-7	Sampling Rate	48kHz (01)
1	0-3	Channel Mode	2 channel stereo (0001)
	4-7	User Bit Mode	192-bit (0001)
2	0-2	Auxiliary Bit Usage	20-bit audio sample, Aux bits undefined (000)
	3-5	Sample Word Length	20- or 24-bits (101)
	6-7	Alignment Level	Not Indicated (00)
3	0-7	Multi-channel Modes	Undefined (0)
4	0-1	Digital Audio Reference Signal	Not a Reference (0)
	2	Reserved	0
	3-6	Sampling Frequency	Not Indicated (0000)
	7	Sampling Frequency Scaling Flag	No Scaling (0)
5	0-7	Reserved	Unused (0)
6-9		ASCII Source ID	Unused (0)
10-13		ASCII Destination ID	Unused (0)
14-17		Local Sample Address	Unused (0)
18-21		Time of Day	Unused (0)
22	0-7	C Data Reliability	Only the first 5 Status Bytes are marked as Reliable All other Status Bytes are marked as Unreliable
23	0-7	CRC	Calculated CRC

Passing the Status Bytes

The card replaces Channel Status Bytes according to **Table 7.6** or passes Status Bytes through from input to output. The following conditions must be met for Status Bytes to pass:

- AES inputs must be 48kHz synchronous
- SRC is set to OFF
- Data Word Length in the Channel Status Bytes must match what is embedded

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your card, the following basic troubleshooting checklist may help identify the source of the problem. If the frame still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Technical Support department at the numbers listed under the "**Contact Us**" section.

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the card, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check —** Inspect the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
4. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
5. **Unit Exchange** — Exchanging a suspect unit with a unit that is known to be working correctly is an efficient method for localizing problems to individual units.

Bootload Button

In the unlikely event of a complete card failure, you may be instructed by a Ross Technical Support specialist to perform a complete software reload on the card.

To reload the software on the card

1. Eject the card from the frame.
2. Press and hold the **Bootload** button, while re-inserting the card into the frame.
3. Release the button.
   - The **OK/ERROR** LED flashes green while the card is waiting for a new software load.
   - If a new software load is not sent to the card within 60 seconds, the card will attempt to re-start with its last operational software load.
   - Software loads can be sent to the card via the connection on the rear of the frame.

Warranty and Repair Policy

The SFS-8622-A is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your card proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this card has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ross Video policy dictates that all repairs to the card are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your card, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your card. If required, a temporary replacement frame will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

Technical Support	Telephone:	+1 613 • 652 • 4886
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